

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
NONRULE POLICY DOCUMENT**

Title: Combined Sewer Overflow (CSO) Long-Term Control Plan Use Attainability Analysis Guidance

Identification Number: Water-003-NRD

Date Originally Effective: December 14, 2001

Dates Revised: None

Other Policies Repealed or Amended: None

Brief Description of Subject Matter: This document fulfills the mandates of Senate Enrolled Act 431 by providing guidance to municipal National Pollutant Discharge Elimination System (NPDES) permittees with combined sewer collection systems. Specifically, the guidance instructs permittees on how to develop a CSO Long-Term Control Plan to address the elimination of impacts to waters of the state from discharges of untreated sewage from CSOs, and how to develop a Use Attainability Analysis to demonstrate the need for a water quality standards revision.

Citations Affected: 327 IAC 2 and 327 IAC 5

This nonrule policy document is intended solely as guidance and does not have the effect of law or represent formal Indiana Department of Environmental Management (IDEM) decisions or final actions. This nonrule policy document shall be used in conjunction with applicable laws. It does not replace applicable laws, and if it conflicts with these laws, the laws shall control. This nonrule policy document may be put into effect by IDEM thirty days after presentation to the appropriate board and after it is made available to public inspection and comment, pursuant to IC 13-14-1-11.5. If the nonrule policy is presented to more than one board, it will be effective thirty days after presentation to the last. IDEM will submit the policy to the Indiana Register for publication. Revisions to the policy will follow the same procedure of presentation to the board and publication.

**EXECUTIVE SUMMARY: CSO GUIDANCE**

All waters in Indiana are designated for full-body recreational contact use and for support of a well-balanced aquatic community. Discharges from CSOs cannot cause or contribute to violations of water quality standards, including criteria adopted to protect these uses. Senate Enrolled Act (SEA) 431 provides a mechanism whereby CSO municipalities may apply for targeted relief from this requirement, provided the criteria set forth in the statute are met. Although many CSO

municipalities will be able to eliminate the water quality impacts caused by their CSO discharges without incurring substantial and widespread economic and social hardship, those who cannot will likely want to review the CSO-related provisions of the SEA 431 to determine if they can take advantage of the relief it provides.

There are several criteria that must be met before a temporary suspension can be granted under SEA 431. These criteria are codified at IC 13-18-3-2.5. Since the bacteriological criteria has been the main focus of concern this document focuses on the recreational designated use and the bacteriological criteria and is geared towards those CSO municipalities interested in seeking a temporary suspension under SEA 431.

### **A. Identification of Uses**

All waters in Indiana are designated for full-body recreational contact and for support of a well-balanced aquatic community.

The first step in determining the conditions of a temporary suspension of a designated use and its associated water quality criteria, is to determine what designated use is to be suspended and what the existing use is for a water body. Remembering that an “existing use” cannot be removed, suspended, or otherwise modified, unless modified to make it more protective, it is important that IDEM determines, with input from the community what existing uses may apply to their water bodies. IDEM will determine that a use exists if the use is or has been “actually attained” or the water quality necessary to support the use is in place even if the use, itself, is not currently established, as long as other non-water quality related factors would not prohibit the use. Any decision regarding whether recreational uses are an “existing use” must be a water body-specific determination.

### **B. Consideration of Sensitive Areas**

It is the responsibility of the NPDES permit holder to identify all existing uses and sensitive areas. The NPDES permit holder must assess exactly what is occurring along the waterways which flow through their jurisdictions and to which their CSOs discharge. The appropriate time to undertake this evaluation would be during the stream reach characterization and evaluation (SRCER) and during the identification of sensitive areas. An element of the Long Term Control Plan is the identification of sensitive areas, so the highest priority can be given to CSO abatement projects to protect those areas. The NPDES permit holder shall provide a map identifying the locations of all actual uses and a detailed description of each use.

The identification of sensitive areas is one of the first objectives in the development of the LTCP. The sensitive areas which must be considered are listed below. Downstream impacts from CSO discharges must also be considered. Some considerations in determining sensitive areas include whether the area has the potential for attracting people to the water body or the land adjacent to the water body. An example of this may be where a park or greenway is located along a CSO impacted

water body. If at the interface between the land and the water there is a steep bank or retaining wall structure, or a railing structure that discourages access to the water body, then access to the water body is limited and the likelihood of full body contact with the water body is unlikely. The municipality may want to install solids and floatable controls to improve the aesthetic appeal, but not necessarily giving this area the highest priority for CSO control

The uses listed below are some examples of how streams and their adjacent corridors may be used. This list also represents the list of considerations of “sensitive areas” to be used in determining the priorities of abatement projects in the Long Term Control Plan. The list is not all-inclusive.

**“Sensitive Areas,”** means waters impacted by CSO discharges which must be given the highest priority for CSO discharge elimination, relocation, or control. Examples of sensitive areas include:

- Habitat for threatened or endangered species
- Primary Contact Recreational Areas such as beaches and other swimming areas
- Drinking Water Source Waters
- Outstanding State Resource Waters

### **C. Public Participation**

The NPDES permit holder must identify stakeholders of the community, including private citizens, neighborhood organizations, civic groups, environmental groups, etc., and organize a citizens advisory committee. This advisory committee may function to identify how best to gather further meaningful input from affected parties, identify water quality goals for the community, assist in the identification of sensitive areas and existing uses, selection of CSO abatement alternatives, and communicate the terms of the chosen Long Term Control Plan to the public.

### **D. Determination of Cost Effective CSO Abatement Projects**

Documentation of plausible alternatives, ranging from “no action” to “complete elimination of CSO impacts,” must be developed by the CSO community. Each alternative or group of alternatives must be evaluated based on its performance versus cost to insure that, at a minimum, the most cost effective alternatives are chosen. The “knee of the curve” test may be used to determine cost effectiveness. An additional cost evaluation must be made of a complete elimination of CSO impacts alternative in order to establish the upper limit of CSO abatement costs. If the community determines total elimination of CSO impacts would result in substantial and widespread economic and social impact, then the community must identify the point at which implementation of CSO controls would no longer cause substantial and widespread impact. These costs will ultimately become the basis for evaluation of the widespread economic hardship and burden test detailed in factor 6 of the Use Attainability Analysis options, as explained in Step #5.

## **E. Conduct Affordability Analysis**

Once the total project cost of the chosen CSO abatement projects is determined, the community must determine how quickly the community can afford to implement these controls. This will ultimately lead to a project implementation schedule. Information regarding how to conduct an affordability analysis is presented in the Implementation Section of this guidance. This information will also be used in the widespread hardship and economic burden test of the Use Attainability Analysis. The affordability analysis uses the total project cost for the chosen cost-effective CSO abatement projects and the existing wastewater costs. The UAA, however, will require the analysis to be based on the cost of implementing CSO controls until the community reaches water quality improvements equal to or great than the point at which further CSO controls would result in substantial and widespread economic and social impact.

## **F. Develop an Implementation Schedule**

Like any construction project, there must be a scope of work, a budget, and a schedule. The schedule of implementation of the chosen CSO abatement projects will be based on the amount of money available to the community to accomplish these projects within certain periods of time. If the UAA is not approved, the community will need to revise its schedule to accommodate implementation of such controls as necessary to fully eliminate CSO impacts.

## **G. Long Term Control Plan and Use Attainability Analysis**

In many cases, a community will not be able to afford the total elimination of all impacts from CSOs. It is well accepted that any discharge from a CSO will likely contribute to violations of the water quality standard for E. coli. A community that cannot afford to eliminate all impacts from its CSOs should conduct a Use Attainability Analysis demonstrating that attaining the designated use is not feasible due to one of the six factors listed in 40 CFR 131.10(g).

The LTCP can provide the information necessary to identify the duration of a temporary suspension of the water quality standards through the evaluation of control alternatives and their impacts on reducing the frequency and duration of CSO discharges

The identification of “sensitive areas” will provide the basis for prioritization of CSO controls. The community will identify a range of project costs. The applicant will provide public participation in the process. The knee of the curve analysis will provide the total project cost for a cost effective CSO abatement program. The LTCP will also identify the total project cost for total elimination of CSO impacts, as well as the point at which implementation of further CSO controls will result in widespread economic and social impact. This latter information will form the basis for relying on factor 6 of 40 CFR 131.10(g), and the use of an environmental benefit watershed approach beyond the knee of the curve.

## **H. Long Term Control Plan Implementation and Post-Construction Monitoring**

Upon approval of the LTCP by the permitting authority and incorporation into the NPDES permit or other enforceable document, the community must immediately embark on the design and construction of selected and approved CSO controls. SEA 431 provides the basis for a permit holder to request the temporary suspension of a designated use and its associated water quality criteria, if adequately demonstrated via the UAA.

SEA 431 also requires permit holders to periodically review their LTCPs to implement control alternatives determined to be cost-effective. Along with this periodic review of the LTCP, the permit holder will be required to evaluate the need for, or the duration of, the temporary suspension of the water quality standards. SEA 431 is very specific in its requirement that the temporary suspension only be for the least amount of time necessary and no more than four days after the end of the CSO discharge.

The permit holder must also implement its post-construction monitoring program along with the construction of CSO abatement projects. Like any water quality improvement project, the effectiveness of the control technology must be evaluated. The post-construction monitoring program can be a valuable tool to the community by providing check points through the LTCP implementation to insure that money spent for CSO abatement is being done so in the most cost effective manner.

## **I. GENERAL PURPOSE OF THE INDIANA CSO POLICY**

The federal and state CSO policies are divided into two phases. Phase I focuses on the technology-based (referred to as the “nine minimum controls”) that maximize the existing infrastructure. Phase II will generally require capital expenditures to meet water quality standards if Phase I proves to be inadequate. The implementation of Phase II CSO controls may be done in a phased manner over several five-year permit cycles, if necessary.

*Phase I - Implementation and documentation of the Nine Minimum Controls (Technology-Based Standards).*

1. Proper operation and regular maintenance of the collection system;
2. Maximum use of the collection system for storage of excess flows;
3. Review and modification of Industrial Wastewater Pretreatment programs;
4. Maximization of flow to the POTW for treatment;
5. Prohibition of CSO discharges during dry weather;
6. Control of solid and floatable materials in CSO discharges;
7. Pollution prevention programs (source control or source reduction);
8. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts; and
9. Monitoring to characterize CSO impacts, identify problem CSO points, and identify the effectiveness of the previous 8 controls. The ninth minimum control is implemented through the Stream Reach Characterization and Evaluation Protocol and Report (SRCER).

*Phase II - Long Term Control Plan (LTCP) Finalization and Implementation (Water Quality-Based).*

1. Sensitive areas and actual recreational uses defined and given the highest priority for CSO control,
2. Public participation in the selection and identification of priority areas and CSO controls,
3. Characterization, monitoring, and modeling as the basis for knee-of-the-curve or presumption approach in selection of CSO control alternatives,
4. Evaluation of an array of control alternatives ranging from “no action” to “complete

- elimination or capture” of CSO discharges,
5. Evaluation of maximization of wet weather flows at the existing treatment plant,
  6. Cost vs. performance considerations for screening and ranking of control alternatives,
  7. Implementation schedule for CSO controls,
  8. Affordability analysis (ability of a municipality to pay for CSO controls over what period of time),
  9. Post-construction compliance monitoring program, and
  10. CSO Operational Plan revisions to reflect changes resulting from construction of CSO controls.



## **II. DEFINITIONS**

**“Affected Public”**, includes the residential and business rate payers and users of the sewer system, persons who reside in municipalities that are downstream from the CSOs that could be affected by CSOs, persons who use and enjoy these waters, user organizations (such as fishing and boating clubs, conservation groups, etc.), and residents and businesses that would be affected by any construction associated with CSO abatement project implementation.

**“Combined Sewage”**, refers to a combination of wastewater (including domestic, commercial, or industrial wastewater) and storm water transported in a combined sewer or combined sewer system.

**“Combined Sewer”**, means a sewer that is designed, constructed, and used to receive and transport combined sewage.

**“Combined Sewer Operational Plan”**, means a plan that contains the minimum technology controls applicable to, and requirements for operation and maintenance of, a combined sewer system.

**“Combined Sewer System”**, means a system of combined sewers that:

- (1) is designed, constructed, and used to receive and transport combined sewage to a publicly owned wastewater treatment plant; and
- (2) may contain one (1) or more overflow points that discharge combined sewage entering the publicly owned wastewater treatment works when the hydraulic capacity of the system or part of the system is exceeded as a result of a wet weather event.

**“Control Alternative”**, means any of the following measures, or any combination of the following measures, for the control of wet weather flows in a combined sewer system:

- (1) Source controls.
- (2) Collection system controls.
- (3) Storage technologies.
- (4) Treatment technologies.

**“CSO Impact Elimination”**, includes (1) the elimination of the CSO impacts through treatment of the discharge or pollution prevention, or (2) the removal, disconnection, plugging or other permanent mean of preventing a discharge from a CSO outfall.

**“Designated Uses”**, are those uses specified in water quality standards for each water body or segment whether or not they are being attained.

**“Existing Use”**, means a use actually attained in the water body on or after November 28, 1975, whether or not it is included in the water quality standards.

**“First Flush”**, means the transport of solids in a combined sewer system that:

- (1) have settled in pipes during periods between wet weather events; and



(2) have washed off of impermeable surfaces such as streets and parking lots during the beginning of a wet weather event.

**“Full Body Contact Recreation”**, means swimming and other activities that potentially involve total body immersion. Such activities include, but are not limited to, SCUBA diving, snorkeling, water skiing, and ceremonial uses.

**“Hydraulic Model”**, means a technically acceptable method for assessing the hydraulic response of a combined sewer system to a specific rainfall/runoff event, by quantifying the total volume of discharge and/or peak rate of discharge from one or more CSO points that result from control alternatives ranging from “doing nothing” to “complete CSO elimination”.

**“Knee of the Curve”**, the point where the incremental change in the cost of the control alternative per change in performance of the control alternative changes most rapidly.

**“Long Term Control Plan”**, means a plan that:

- (1) is consistent with the federal Combined Sewer Overflow Control Policy (59 Fed.Reg. 18688);
- (2) is developed in accordance with the recommendations set forth in Combined Sewer Overflows Guidance for Long Term Control Plan (EPA 832B95002);
- (3) describes changes and improvements to be made to a combined sewer system or to a publicly owned wastewater treatment plant for the purpose of meeting the requirements of the federal Clean Water Act and state law;
- (4) is developed with public participation using a process that is designed to promote active involvement by the affected public, through opportunities to provide in the decision making to select long term control alternatives:
  - (A) information;
  - (B) opinions; and
  - (C) comments;
- (5) is submitted to the department for approval; and
- (6) considers the site-specific nature of combined sewer overflow discharges and does the following:
  - (A) uses characterization, monitoring, and modeling of the combined sewer system to determine:
    - (i) the response of the combined sewer system to various precipitation events;
    - (ii) the characteristics of overflows from the combined sewer system; and
    - (iii) the water quality impacts that result from overflows from the combined sewer system;
  - (B) considers the impact of combined sewer overflows on sensitive areas and gives highest priority to controlling overflows in those areas;
  - (C) contains an evaluation of a reasonable range of control alternatives, taking into account expected and projected future growth;
  - (D) contains cost and performance analyses of the control alternatives evaluated;

- (E) maximizes treatment of wet weather flows at a publicly owned treatment works (POTW) plant;
- (F) contains a practicable implementation schedule for the selected control alternative;
- (G) contains a post-construction compliance monitoring program adequate to ascertain:
  - (i) the effectiveness of the selected control alternative; and
  - (ii) the extent to which water quality standards have been attained.

**“Sensitive Areas”**, means waters impacted by CSO discharges which must be given the highest priority for CSO discharge elimination, relocation, or control. Examples of sensitive areas include:

- Habitat for threatened or endangered species,
- Primary Contact Recreational Areas such as beaches and other swimming areas,
- Drinking Water Source Waters,
- Outstanding State Resource Waters and Outstanding National Resource Waters.

**“Use Attainability Analysis”**, refers to a structured scientific assessment of the physical, chemical, biological, and economic factors affecting the attainment of a designated use as provided in 40 CFR 131.3(g).

**“Water Quality Model”**, means a technically acceptable method for assessing the real-time and spatial impacts to the quality of a receiving water body resulting from point and non-point source external inputs of pollutants.

**“Wet Weather Event”**, means storm water runoff, snow melt runoff, or ice melt runoff entering a combined sewer system.

### **III. LONG TERM CONTROL PLAN (LTCP)**

All CSO communities have either been, or are in the process of being, issued an NPDES permit by IDEM that requires them to develop a LTCP. The purpose of the Long Term Control Plan is to provide a structured analysis of the combined sewer collection system, water quality impacts from CSO discharges, a methodology for evaluating an array of control alternatives, and a process for the selection of cost effective CSO controls that will fulfill the technology-based and water quality-based provisions of the Clean Water Act.

It should be noted that if at the end of the Long-Term Control Planning process there will still be residual CSO events, then the LTCP cannot be approved unless there is an Use Attainability Analysis or Variance Request submitted, which after review can be considered technically and administratively complete..

SEA 431 requires the LTCP to be consistent with the federal CSO Policy (58 Fed. Reg. 18688) and the federal CSO Guidance for Long Term Control Plan (EPA 832B95002). The LTCP must be approved by IDEM and ultimately implemented by the CSO municipality according to a schedule approved by IDEM. The general requirements of SEA 431 and the federal and state CSO policies are the same; however, SEA 431 contains a few additional requirements that are important to keep in mind when designing a LTCP.

The overall planning approach of a LTCP consists of the following major elements:

1. Consider impacts to sensitive areas near CSO discharge points,
2. Establish public participation process,
3. Characterize, monitor, and model CSO system,
4. Evaluate CSO control alternatives,
5. Maximize Flow to and through the POTW,
6. Establish a CSO Cost/Performance Curve,
7. Prepare an Implementation Schedule,
8. Implement CSO controls on an approved schedule, and
9. Develop post-construction monitoring and sampling protocol.

#### **Small Community Considerations**

CSO municipalities under 75,000 population may request in writing from IDEM the use of a modified planning approach in designing their Long Term Control Plan which must contain **at a minimum** the following elements:

- Establish public participation process,
- Document the full implementation of the nine minimum controls in the CSO Operational Plan,
- Revise the CSO Operational Plan as the LTCP is implemented to reflect plant and collection system changes,
- Maximization of treatment at the wastewater treatment facility,

- Consider impacts to sensitive areas near CSO discharge points,
- Scope, schedule and budget of all proposed CSO control projects, and
- Post-construction monitoring program as the LTCP is implemented.

In making a determination on whether a modified planning approach in designing a LTCP is approved or not, IDEM will consider the CSO municipality's; number of CSOs per capita, magnitude of the CSO discharges, and other environmental impacts from CSO discharges. The implementation of the modified LTCP must not cause or contribute to water quality standards exceedances. Therefore, the CSO municipality using a modified LTCP approach may still be required to develop a Use Attainability Analysis to meet water quality standards. The CSO municipality should confer with IDEM before requesting an approval for using a modified approach for the development of their LTCP.

#### **IV. CONSIDERATION OF SENSITIVE AREAS**

##### **A. Identification**

The USEPA's National CSO Control Policy and Indiana CSO Strategy identify elimination, relocation or control of CSO discharges to sensitive areas as being the highest priority requirement for the development of the Long Term Control Plan. This section therefore, is designed to provide CSO communities with specific guidance with respect to identifying sensitive areas within a CSO community and a decision-making process for identifying appropriate CSO control measures that adequately address the sensitive areas.

**"Sensitive Areas"**, means waters impacted by CSO discharges which must be given the highest priority for CSO discharge elimination, relocation, or control. Examples of sensitive areas include:

- Habitat for threatened or endangered species
- Primary Contact Recreational Areas such as swimming and water skiing areas
- Drinking Water Source Waters
- Outstanding State Resource Waters or Outstanding National Resource Waters

The EPA's CSO Control Policy states, that for sensitive areas, the LTCP should:

1. prohibit new or significantly increased overflow volumes into the sensitive areas;
2. eliminate or relocate overflows that discharge to sensitive areas:
  - a. wherever physically possible and economically achievable, except where elimination or relocation would provide less environmental protection than additional treatment, or;
  - b. where elimination or relocation is not physically possible and economically achievable, or would provide less environmental protection than additional treatment, provide the level of treatment for remaining overflows deemed necessary to meet Water Quality Standards for full protection of existing and designated uses;
3. where elimination or relocation has been proven not to be physically possible and economically achievable, permitting authorities should require, for each subsequent permit term, a reassessment based on new or improved techniques to eliminate or relocate, or on changed circumstances that influence economically feasible.

The implication of item 3 above is simply that even if it is not physically possible and economically achievable to eliminate or relocate overflows to sensitive areas when the LTCP is first approved, it does not relieve the community of the responsibility to continue to evaluate and assess the situation over time. As technologies or economic circumstances change with time, it may become clear that the existing CSO can be eliminated or relocated.

It should be noted that for this element of the LTCP, the relative cost-effectiveness of particular control measures is not analyzed. Such analysis is part of the "Evaluation of Alternatives" element of the LTCP. The intent of this element is to clearly demonstrate that consideration of sensitive areas

has been accomplished through identifying the sensitive areas and determining the type of controls that are physically achievable.

The LTCP should clearly outline a process for reassessing the stream for new sensitive areas or areas that no longer fit the criteria for sensitive areas. Additionally, the permit holder may be required by IDEM to move up the priority for a particular CSO or group of CSOs on a particular stream segment, if it is shown that the previously designated “non-sensitive” segment for the primary contact recreation criteria should be changed to “sensitive.”

## **B. Receiving Stream Sensitive Areas Identification & Documentation**

In the flowcharts that follow, a simple process is suggested for identifying the sensitive areas along the receiving stream segments that may be influenced by CSO outfalls. This process is intended to be applicable to any size community. The process has two outcomes: 1) establish specific stream segments within sensitive areas; and 2) determine whether elimination/relocation treatment alternatives or pollution prevention measures will apply as the control measures for the CSOs within sensitive areas. It must be understood that because sensitive areas must receive top priority, a “no action” alternative selection (due to cost, physical constraints, or any other obstacle) is not acceptable.

In FIGURE 1, the first of the two processes is illustrated. In Step 1, the permit holder documents all known areas along the receiving stream that could be considered as “sensitive areas” according to the criteria above. Some possible sources of information regarding the location of these sensitive areas can be obtained from; Indiana Department of Environmental Management, Indiana Department of Natural Resources, US Fish & Wildlife Service, US Army Corps of Engineers, state and local health departments. Also, surveys of residents along the river and users of the water should be used for confirming locations of recreational sensitive areas.

Once the sensitive areas have been identified, they should be added to the map showing the locations of the CSOs, as illustrated in Step 2. All public access points and stream segments designated as OSRW should be identified on the map. The location of any endangered or threatened species' habitat that are influenced by the streams should also be included on the map.

Once the sensitive areas have been mapped, Step 3 suggests that a detailed survey be conducted along the receiving stream segments to verify sensitive areas, and to identify and document any additional sensitive areas. It is recommended that professionals in the disciplines of field biology and ecology participate in this survey work. Such individuals can be contacted through local colleges and universities, State and Federal regulatory agencies, or private foundations such as conservation or environmental groups, or other groups such as paddlesport clubs or fishing organizations.

Field verified CSOs in documented sensitive areas are to be placed as the top of the priority list for CSO control implementation in the LTCP. It is strongly recommended that the permit holder seek input from the affected public on the identification of the sensitive areas and the corresponding relevant CSOs at this point in the process.

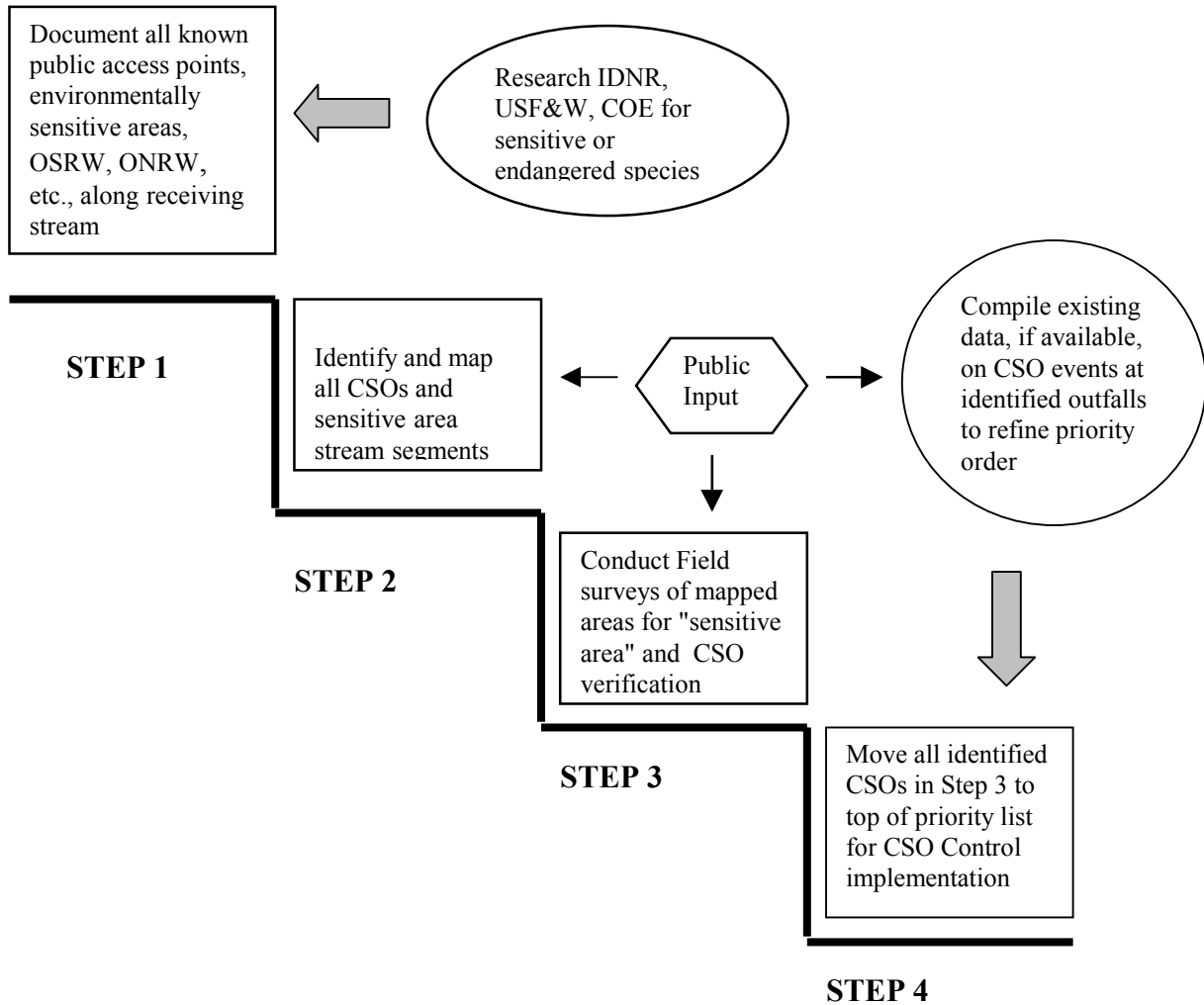
It is important that the public be fully informed on the criteria used to establish these areas and that specific measures will be implemented to remove the CSO impacts that currently exist within these sensitive areas.

Step 4 is the final step in this initial “sensitive area” priority consideration process. Once the areas have been established and the CSOs identified for priority control implementation, the community may wish to prioritize the order of implementation of controls based on the frequency and volume of individual CSO discharges or the mass loading of specific pollutants. Data from field observations or hydraulic models may be used to identify the CSOs having the greatest potential impacts on sensitive areas. This does not, however, imply that the remaining, seemingly lesser impacting CSO within the sensitive areas can be ignored. These also must be controlled. But, the data may infer that certain CSO facilities have greater contribution to the water quality concerns, and controlling those first may result in bringing protection to the sensitive area and improving the water quality standards within that segment sooner.

If data do not exist, each CSO contribution to a sensitive area should be considered equal in priority when considering control alternatives until data are acquired (through the implementation of the LTCP) that justifies specific priority actions.



**Figure 1: Receiving Stream Sensitive Area Identification and Documentation**



### **C. Establishing Type of CSO Controls in Sensitive Areas**

Next, the permit holder should proceed with establishing the levels of control for all the CSOs in the sensitive areas according to the process below in FIGURE 2. Determining the type of control alternative that is appropriate for those CSOs in the sensitive areas is the basis for the process charted in FIGURE 2. The State recognizes that applying complete elimination or relocation alternatives to each and every CSO within a sensitive area may not in every case be feasible due to a variety of constraints that may arise. In the urbanized areas of many CSO communities, both small and large, relief points in the combined systems were often built immediately adjacent to the receiving stream and urbanization grew around it. Consequently, it may be hard to eliminate the relief point because of the physical obstacles present, or because it would not be economically achievable. Use the information as a background, in the first step of FIGURE 2, the permit holder details all constraints associated with each CSO within the sensitive area. These include, but may not be limited to, physical constraints, existing major utilities, and prominent topographic features. Also, sensitive environmental areas shall present constraints to be protected such as; wetlands, bogs, protected riparian habitats, or waterfowl sanctuaries.

Once the constraints have been identified, the permit holder must answer Question 1 in Figure 2. Whether, in light of the constraints, eliminating or relocating the CSOs located in the sensitive areas is physically possible and economically achievable. The intent is to determine the possibility of elimination or relocation based simply on the physical constraining factors, not on cost. The opportunity to evaluate the cost is presented in the cost analysis section of the evaluation of alternatives element of the LTCP. It is assumed that if elimination or relocation is not completely constrained by existing physical features, then the elimination or relocation is deemed possible with cost considerations becoming part of the LTCP's economic analysis. In this situation, the CSO municipalities shall consider modifications or abatements in the combined sewer system up-pipe from the discharge point.

If the answer to Question 1 is Yes, the permit holder proceeds with developing the concepts for alternative(s) that will eliminate or relocate the CSOs in question away from the sensitive areas. If the answer is No, then the implication is that the permit holder has no choice but to keep the CSO relief point at its existing discharge point and develop feasible treatment processes that can be applied to the end-of-pipe. The treatment process must be selected such that the water quality standards are satisfied. These alternatives are then entered into the overall LTCP CSO control alternatives analysis element.

It should be noted that as indicated in FIGURES 1 and 2, there are key points where public input is strongly recommended and should be accurately documented.



#### **D. Sensitive Areas Documentation within the Long Term Control Plan**

The LTCP documents should include the following:

1. a scaled map of the receiving water network showing the identified sensitive areas and CSO locations (The scale of this map should be such that all features are clearly denoted, with 1"=1000' a recommended minimum);
2. documentation of the public participation and decision-making process for selecting elimination and/or relocation alternatives or treatment technique alternatives; and
3. scaled map showing the conceptual layout of the scope of the alternatives developed, which will undergo further scrutiny as part of the economic analysis element of the LTCP.

The National and State CSO Policy is explicit with regard to consideration of sensitive areas in the Long Term Control Plan preparation. In essence, the permit holder has two basic choices for addressing the discharges in sensitive areas. The policy is CSO discharges within identified sensitive areas must be eliminated, or relocated, to non-sensitive areas. If it is demonstrated that eliminating or relocating the CSO is not physically possible and/or economically achievable, then some type of treatment technique alternative must be instituted at or before the point of discharge, so the CSO does not cause or contribute to the exceedance of water quality standard.

## **V. PUBLIC PARTICIPATION**

Establishing and maintaining public input and participation is a required part of the Long Term Control Plan (LTCP) development. It is highly recommended that public participation begin early and continue throughout the development of the LTCP plan including, system characterization, sensitive area designation, selection of control alternatives, and final implementation of the control plan. Inviting early participation helps to insure that that public funds are prioritized and the control measures are focused on the uniqueness and priorities of the individual community. Effective public participation projects will include elements such as citizen advisory committees, public meetings and hearings, public education and involvement

### **A. Citizen Advisory Committees**

Citizen Advisory Committees (CACs) should be formed in order to serve as “liaisons among municipal officials, NPDES permitting agencies, and the general public.” The formation of this type of advisory committee is the recommended way to begin the public participation process. Typical members of the committee might include representatives from businesses, environmental groups, neighborhood associations, citizen activists, and municipal and elected officials. The specific tasks of the advisory committee may vary in different communities. However, the overall goal is to help the decision-makers of the community select long-term controls which best achieve the environmental goals of the community in an economically responsible manner and to assist in the determination of sensitive areas.

### **B. Public Meetings and Hearings**

Public meetings and hearings should be conducted as part of a public participation process. Public meetings are typically a forum for describing and explaining control alternatives and soliciting feedback from the public as to priorities and alternatives.

Public meetings might be scheduled at key project milestones during the development of the Long Term Control Plan. Technically complex ideas and information must be presented in a way which is easily understandable to the general public. The discussion should provide a high degree of detail and background for all attendees. Some of the milestones that might be included in a public meeting are:

- Verification of sensitive areas identification
- Presentation of the work plan for the system characterization monitoring and assessment
- System characterization results
- Storm and river model results
- Cost-effective analysis results
- Presentation of control alternatives
- Control option selection

Public hearings are usually a more formal forum in which the agenda, including comments, questions, and responses are recorded. Typically only one or two public hearings will be held by IDEM, so that public interest groups, businesses, civic organizations and the general public can make official comments or pose questions to the municipality.

### **C. Public Education**

Few people in a community will understand the complexities of CSOs and CSO control development. Therefore, educating the public early in the process is an important part of public participation and plays a significant role in getting public support for long term control plans. Some educational programs suggested in the EPA Long Term Control Plan Guidance and supported by this guidance include:

- Placement of informational and warning signs near CSO areas
- Media Coverage and Videotape production
- Speaker's bureau
- Newsletters
- Direct mailers, issue booklets, and bill inserts
- Educational software

### **D. Public Involvement**

Participation programs that include involvement from the general public are much more likely to be effective at generating interest and input in the control plan. Some public involvement programs can include:

- Control alternative workshops,
- Funding task force,
- River committee,
- Community leader interviews,
- Telephone surveys, and/or
- Focus groups.

### **E. Community Notification Program**

Under the requirements of SEA 431, the Indiana Water Pollution Control Board will adopt rules that establish requirements for community notification by NPDES permit holders. Notification of the potential health impacts of CSOs must be made by the CSO community (i.e. the permit holder) whenever information from a reliable source indicates that a CSO is occurring, or is reasonably likely to occur within the next 24 hours. Community notification will be an ongoing part of the CSO control plan.

The NPDES permit holders must provide for effective notice to the public. The NPDES permit holder should consider the following items to demonstrate an effective notice to the public has occurred, such as:

- Signs at Common Access Points
- Notice to Broadcasters
- Notice to Schools
- Notice to Downstream Communities and Users
- Timeliness of Notices
- Content of Notices
- Report to IDEM when Community Notifications have occurred

IDEM anticipates providing a draft rule on the implementation of a Community Notification Program for NPDES permit holders by October 31, 2001.



## **VI. CHARACTERIZATION, MONITORING, AND MODELING**

In order to design a CSO control plan adequate to meet the requirements of the CWA, a permit holder must have a thorough understanding of its sewer system, the response of the system to various precipitation events, the characteristics of the overflows, and the water quality impacts that result from CSOs. The permit holder must adequately characterize through monitoring, modeling, and other means as appropriate, the response of its sewer system for a range of storm events. This characterization must include the number, location and frequency of CSOs, volume, concentration and mass of pollutants discharged and the impacts of the CSOs on the receiving waters and their designated uses. The permit holder may need to consider information on the contribution and importance of other pollution sources in order to develop a final plan designed to meet water quality standards.

The purpose of the system characterization, monitoring and modeling program initially, is to assist the permit holder in developing appropriate measures to implement the nine minimum controls and, if necessary to meet water quality standards, to support development of the long-term CSO control plan. The monitoring and modeling data also will be used to evaluate the expected effectiveness of both the nine minimum controls and, if necessary, the long-term CSO controls. The major elements of a sewer system characterization include:

### **A. Rainfall Records**

The permit holder must examine the complete rainfall record for the geographic area of its existing Combined Sewer System using sound statistical procedures and best available data. The permit holder should evaluate flow variations in the receiving water body to correlate between CSOs and receiving water conditions. Rainfall records and other relevant climatological data may be available from a variety of sources such as the National Weather Service, university or high school science departments, power plants and other industries, and agricultural extension offices. To accurately understand the precipitation patterns and the dose-response relationship between the precipitation events and combined system performance, the permit holder should establish a statistically significant network of rain gauges. The statistical significance of the network is highly dependent on the area of the combined service area and whether there may be significant differences in precipitation events from one side of a city to another. To put it in simple terms, if it is raining at the treatment plant and is likely to be raining equally over the entire CSS service area, a single rain gauge may be sufficient. However, if the CSO municipality is large enough where it may be raining on one side of the city and dry on the other, then the CSO municipality needs to have a network of rain gauges.

### **B. Combined Sewer System Characterization**

The permit holder must evaluate the nature and extent of CSO events in its sewer system. CSO

municipalities should use; available sewer system records, field inspections and other activities necessary to understand the number, location and frequency of overflows, and the locations relative to sensitive areas and pollution sources in the collection system such as indirect significant industrial users. A major component of the Combined Sewer System characterization is the development of a comprehensive 3-dimensional map of the collection system. Not only will this map be necessary for successful modeling of the collection system, an accurate map will be of great assistance to the community in its operation and maintenance program. It is recommended that the maps should be digitized and become an integral part of a Geographic Information System (GIS) for the POTW system.

### **C. CSO Monitoring**

The permit holder must develop a comprehensive, representative monitoring program that measures the frequency, duration, flow rate, volume and pollutant concentration of CSO discharges and assesses the impact of the CSOs on the receiving waters. The monitoring program must include necessary CSO effluent and ambient in-stream monitoring and, where appropriate, other monitoring protocols such as biological assessment, toxicity testing, and sediment sampling. Monitoring parameters must include, for example, oxygen demanding pollutants, nutrients, toxic pollutants, sediment contaminants, pathogens, and bacteriological indicators ( e.g., *Enterococcus*, *E. coli*). Generally, the parameters to be sampled must be at least the same as those regulated in the NPDES treatment plant permit. A representative sample of overflow points can be selected that is sufficient to allow characterization of CSO discharges and their water quality impacts and to facilitate evaluation of control plan alternatives. To accurately characterize the pollutants being discharged from a Combined Sewer System, representative CSO outfalls must be sampled during an overflow event. Representative outfalls may be chosen based on types of dischargers, or based on representative land uses in the Combined Sewer System service area, such as, residential, industrial, mixed, etc. The intent of such sampling is to understand how pollutant concentrations taper off as a precipitation event continues until some equilibrium is reached. This will provide information regarding whether first flush is actually being captured for treatment. It cannot be assumed that the entire discharge volume will contain the same pollutant concentrations for the duration of the precipitation event. However, this cannot be demonstrated without adequate monitoring.

### **D. Modeling**

Modeling of a sewer system is recognized as a valuable tool for predicting sewer system response to various wet weather events and assessing water quality impacts when evaluating different control strategies and alternatives. EPA supports the proper and effective use of models, where appropriate, in the evaluation of the nine minimum controls and the development of the CSO LTCP. It is also recognized that there are many different models which may be used to do this. These models range from simple to complex. Having decided to use a model, the permit holder should base its choice of a model on the characteristics of its sewer system, the number and location of overflow points,

and the sensitivity of the receiving water body to the CSO discharges. Use of models should include appropriate calibration and verification with field measurements. The sophistication of the model should relate to the complexity of the system to be modeled, and to the information needs associated with evaluation of CSO control options and water quality impacts. EPA believes that continuous simulation models, using historical rainfall data, may be the best way to model sewer systems, CSOs, and their impacts. Because of the iterative nature of modeling sewer systems, CSOs, and their impacts, monitoring and modeling efforts are complementary and should be coordinated with IDEM.

## VII. EVALUATION OF ALTERNATIVES

SEA 431 requires the LTCP to contain an evaluation of a reasonable range of control alternatives; taking into account expected and projected future growth. The plan must consider options ranging from no action to expansion of the POTW's secondary and primary capacity to eliminate all CSO events. A reasonable range of control alternatives would include an evaluation of controls necessary to achieve:

- Complete elimination of CSO impacts,
- Various levels of control (design storms),
- An average of one to three, four to seven, and eight to twelve overflow events per year,
- Controls that achieve 100%, 95%, 90%, 85%, 80%, and 75% capture for treatment of what volume or mass that cause or contribute to the exceedence of the water quality standard.

The analysis of alternatives should be sufficient to make a reasonable assessment of cost and performance as described in the section on Cost-Performance Considerations. The CSO LTCP must also consider sensitive areas as discussed in the above section on Sensitive Areas.

The LTCP must provide site-specific, cost-effective CSO controls that will eliminate any causes or contributions to exceedances of the water quality standard. IDEM expects the LTCP will consider a reasonable range of alternatives and varying control levels within those alternatives, using cost-effectiveness as a consideration, to help guide consideration of the controls. The selected controls should be designed to allow cost-effective expansion or retrofitting if additional controls are necessary to meet water quality standards or become cost effective to implement in future reviews of the LTCP.

### A. Analysis of Approaches

The national CSO Control Policy and Indiana CSO Strategy identify two general approaches for the attainment of water quality standards: the demonstration approach and the presumption approach. The demonstration and presumption approaches provide municipalities with targets for CSO controls to achieve compliance with the Clean Water Act (CWA), particularly protection of designated and existing uses. All municipalities should characterize their Combined Sewer Systems in order to establish a baseline and provide a basis for implementing and evaluating the effectiveness of the nine minimum controls (NMC). Characterization will likely include monitoring and modeling to characterize CSO flow and pollutant load impacts on receiving water quality from CSO and non-CSO sources, and efficacy of CSO controls. This characterization will enable IDEM, in conjunction with the municipality and with input from the affected public to determine whether the demonstration or presumption approach is the most suitable.

Generally, especially for larger communities, if sufficient data are available to demonstrate the proposed plan would result in an appropriate level of CSO control, then the demonstration approach will be selected. The demonstration approach is particularly appropriate where attainment of water quality standards can not be achieved through CSO control alone, due to the impacts of non-CSO

sources of pollution. In such cases, an appropriate level of CSO control cannot be dictated directly by existing water quality standards, but must be defined based on water quality data, system performance modeling, and economic factors. These factors may support the revision of existing water quality standards. In-stream modeling might not be feasible for communities with few CSOs or CSOs discharging to small streams. Under these circumstances, the presumption approach might be the best approach for evaluating CSO control alternatives.

The National CSO Control Policy and Indiana CSO Strategy recommend flexibility in allowing a municipality to select controls that are cost-effective and tailored to local conditions. For this reason, the choice between the demonstration approach and presumption approach does not necessarily have to be made before a municipality commences work on its LTCP. In some cases, it might be prudent for a municipality to assess alternatives under both approaches.

In addition, if a municipality has CSOs which discharge to two different water bodies, a control plan which includes the demonstration approach for one receiving water and the presumption approach for the other may be appropriate. Because of the flexibility in selecting an approach, it is imperative that the municipality coordinate closely with IDEM. Involving the public and other stakeholders will also provide a foundation for subsequent LTCP acceptance.

## **B. Demonstration Approach**

Under the demonstration approach, the municipality would be required to successfully demonstrate compliance with each of the following criteria:

1. The planned control program is adequate to meet water quality standards and protect designated uses, unless water quality standards or uses can not be met as a result of natural background conditions or pollution sources other than CSOs. The EPA CSO Control Policy reiterates the fact that NPDES permits must require attainment of water quality standards, but recognizes that in many receiving water segments, sources other than CSOs might be contributing substantially to non-attainment of water quality standards. In these cases, even complete elimination of CSOs might not result in attainment of water quality standards.
2. The CSO discharges remaining after implementation of the planned control program will not preclude the attainment of water quality standards or the receiving waters' designated uses or contribute to their impairment. Where water quality standards and designated uses are not met in part because of natural background conditions or pollution sources other than CSOs, a total maximum daily load, including a wasteload allocation, a load allocation or other means should be used to apportion pollutant loads. This is intended to ensure the selected level of CSO control would be sufficient to allow attainment of water quality standards if other sources causing non-attainment were controlled.
3. The planned control program will provide the maximum pollution reduction benefits reasonably attainable, and this reiterates the emphasis on developing cost-effective levels of control.

4. The planned control program is designed to allow cost-effective expansion or cost-effective retrofitting if additional controls are subsequently determined to be necessary to meet water quality standards or designated uses. Assures sufficient flexibility is incorporated into the LTCP to allow upgrading to higher levels of control if necessary.

### **C. Presumptive Approach**

The CSO Control Policy recognizes that “...data and modeling of wet weather events often do not give a clear picture of the level of CSO controls necessary to protect water quality standards”. For this reason, the presumptive approach was included in the CSO Control Policy as an alternative to the demonstration approach.

The presumptive approach is based on the assumption that a LTCP that meets certain minimum defined performance criteria “would be presumed to provide an adequate level of control to meet the water quality-based requirements of the CWA, provided the permitting authority determines that such presumption is reasonable in light of the data and analysis conducted in the characterization, monitoring, and modeling of the system and the consideration of sensitive areas.” The use of this approach may be limited due to the expression of the *E. coli* standard as a daily maximum.

Under the presumption approach, controls adopted in the LTCP should be required to meet one of the following criteria:

1. No more than an average of four overflow events per year, provided that the permitting authority may allow up to two additional overflow events per year. For the purpose of this criterion, an overflow event is one or more overflows from a Combined Sewer System as the result of a precipitation event that does not receive the minimum treatment specified. The CSO Control Policy defines an overflow event under Criterion 1 as “...one or more overflows from a CSS as the result of a precipitation event that does not receive the minimum treatment specified ...”. This refers to untreated or inadequately treated overflow, overflows not receiving the minimum treatment of primary clarification, solids and floatables disposal, and disinfection, if necessary. Outfalls may overflow more frequently if they receive the minimum specified treatment as discussed above; or
2. The elimination or the capture for treatment of no less than 85% by volume of the combined sewage collected in the Combined Sewer System during precipitation events on a system-wide annual average basis. Under Criterion 2, the “85 percent by volume of the combined sewage” refers to 85 percent of the total volume of flow collected in the CSS during precipitation events on a system-wide, annual average basis (not 85 percent of the volume being discharged); or
3. The elimination or removal of no less than the mass of the pollutants identified as causing water quality impairment through the sewer system characterization, monitoring, and modeling effort for the volumes that would be eliminated or captured for treatment under



criterion 2 above. Criterion 3, meanwhile, makes the distinction between the control of CSO volume and the control of the specific pollutants within that volume that cause water quality impairment. CSS modeling could provide the total volume of flow collected during wet weather in the CSS on an annual average basis. The volume required to be captured to meet Criterion 2 would then be 85 percent of the total. Using average pollutant concentrations and removal efficiencies associated with the equivalent of primary treatment, one could compute the mass of the pollutants that would be removed if 85 percent of the wet weather flow received the equivalent of primary treatment. Comparing this value with the mass of pollutants that is currently removed during wet weather would yield the additional mass of pollutants needed to be removed to meet Criterion 3.

The minimum level of treatment applicable to above criteria 1 and 2 is defined in EPA's CSO Control Policy as follows:

- Primary clarification; removal of floatable and settleable solids may be achieved by any combination of treatment technologies or methods that are shown to be equivalent to primary clarification of 30% removal;
- Solids and floatable disposal; and
- Disinfection of effluent, if necessary, to meet water quality standards, protect designated uses and protect human health, including removal of harmful disinfection chemical residuals, where necessary.

Use of the presumptive approach does not relieve municipalities from the overall requirement that water quality standards be attained. If data collected during system characterization suggest that use of the presumptive approach cannot be reasonably expected to result in attainment of water quality standards, additional controls beyond these already implemented might be required. This is why the CSO Policy recommends "The selected controls should be designed to allow cost-effective expansion or cost-effective retrofitting if additional controls are subsequently determined to be necessary to meet water quality standards, including existing and designated uses."

Analysis performed in conjunction with EPA's 1992 CSO Control Policy dialogue has shown that criteria 1 and 2 are approximately equal. Based on regional rainfall patterns, and primary clarification provided by an appropriately designed sedimentation/storage basin, the number of annual overflows corresponding to primary clarification of 85 percent of the combined sewage was determined. On a nationwide basis, the number of overflows not receiving primary treatment and corresponding to 85 percent capture for treatment, ranged from four to six depending on location.

In practice, a CSO control facility, which captures for treatment 85 percent of the combined sewage collected in the system, may experience more than six overflows on an annual average basis, although a significant deviation from this range of overflows would not be expected. In cases where a significant deviation due to local conditions is encountered, the agency's best professional judgment should be used to determine whether use of the 85 percent capture criterion is appropriate.

Also, as previously stated, use of either of the presumption approach options should be based on reasonable assumption that implementation of controls meeting these criteria will be sufficient to



prevent violations of water quality standards.

### **VIII. MAXIMIZE FLOW THROUGH POTW**

SEA 431 requires municipalities to maximize treatment of wet weather flows at the treatment plant as part of the LTCP. Maximizing the use of existing wastewater treatment facilities to treat wet weather flow is a cost-effective way to reduce the magnitude, frequency, and duration of CSOs, which flow untreated into receiving waters. The municipality must submit documentation in the LTCP demonstrating a diligent effort to evaluate alternatives for increasing flow to the POTW.

The EPA Policy considers the use of POTW capacity within two contexts. First, the CSO municipality should evaluate the expansion of its secondary and primary treatment capacity in the evaluation of long term control alternatives. Second, the CSO municipality must address the specific case where existing primary treatment capacity at a POTW exceeds secondary treatment capacity and it is not possible to utilize the full primary treatment capacity without overloading the secondary facilities.

#### **A. Alternatives for Maximizing Flow through POTW**

Maximizing flow to the POTW is a critical element of maximizing flow through the POTW. Maximizing wet weather flow to the POTW entails evaluating the capacities of major pump stations and interceptor sewers. Emphasis must be placed on proper operation and maintenance of the sewer collection system. As part of the Long Term Control Plan, POTWs must evaluate the wet weather performance of all treatment plant units, identify limiting unit processes, and actual peak flow capacities. Specific unit processes may include, but are not limited to, grit removal and screening, influent pumping, primary and secondary clarification, and disinfection.

During the evaluation and selection of CSO control alternatives, consideration must be given to expansion of those unit processes which are deficient or could be cost effective to expand. The expansion of unit processes may show it is infeasible or not cost efficient to expand treatment process units. However, the POTW must have a high peak wet weather flow management plan as part of its standard operating procedures which details how high flows from wet weather will be handled.

Where the POTW has capacity to treat wastewater flows which exceed the design flow used to calculate normal water quality based effluent limitations, the CSO municipality may request increased mass limits. Such alternate limits may be justified if the POTW can, as a result of the increased limitations, reduce the volume of discharge of wastewater from CSO discharge points.

#### **B. Diversion of Flows around Secondary Treatment**

Some municipalities with combined sewer systems have primary treatment capacity that is greater than their secondary treatment capacity. These municipalities may be able to take peak, wet weather

flow into their plant and provide primary treatment, but not secondary treatment to the flow before it is recombined with flows that have received biological treatment prior to discharge.

IDEM will not consider facilities operating in this manner to be in violation of the bypass rule (327 IAC 5-2-8(11)) and will recognize such operations in the facilities' NPDES permits if:

1. The facility includes in its application an explanation of how it will utilize all existing equipment to its fullest capacity to maximize treatment of the influent. The facility must include a description of the capacity of the primary and secondary treatment units; a schematic diagram of how the facility will be operated during peak, wet weather flow conditions; a showing that the system has been designed to meet secondary limits for flows greater than the peak dry weather flow plus an appropriate quantity of wet weather flow; a justification for the cut-off point at which flow will be diverted from secondary treatment;
2. All flows that are diverted around the secondary facilities during wet weather flow conditions receive treatment at least equivalent to primary treatment, solids and floatables removal and disposal, and disinfection; and
3. Effluent limitations are met after the flows are recombined and prior to discharge.

The NPDES permit will include conditions:

1. establishing the cut-off point at which flow can be diverted from secondary treatment;
2. requiring the facility to meet effluent limitations after the flows are recombined;
3. requiring the facility to utilize the full treatment capacity of the treatment plant;
4. requiring the plant to be operated in accordance with its application and be maintained in good working order and efficiently operated;
5. establishing monitoring requirements sufficient to enable IDEM to determine whether the effluent limitations and operational requirements are being met at the time the peak, wet weather flow is being taken through and discharged from the plant;
6. establishing any other effluent limitations necessary to ensure compliance with water quality standards or technology-based requirements as a result of the pollutant characteristics of the recombined flow.

The more efficiently existing facilities are utilized, the less prohibitive total CSO control costs are likely to be under the Long Term Control Plan.

## **IX. POST-CONSTRUCTION COMPLIANCE MONITORING PROGRAM**

The selected CSO controls must include a post-construction water quality monitoring program which is adequate to verify improvement and compliance with water quality standards and protection of designated uses, as well as ascertain the effectiveness of CSO controls. The water quality compliance monitoring program must include a plan that must be approved by IDEM, detailing the monitoring protocols to be followed. These monitoring protocols must include the necessary effluent and ambient monitoring, and where appropriate, other monitoring protocols such as biological assessments, whole effluent toxicity testing, and sediment sampling.

SEA 431 also contains provisions applicable to the post-construction compliance monitoring program. It requires the permit holder to review the feasibility of implementing additional or new control alternatives to attain water quality standards, including standards temporarily suspended. The permit holder shall conduct a periodic review not less than every five (5) years after the approval of the Long Term Control Plan. The permit holder shall:

1. Document to the department that the Long Term Control Plan has been reviewed;
2. Update the Long Term Control Plan as necessary to document the results of the post-construction monitoring of installed CSO abatement projects;
3. Submit any amendments to the LTCP to the department for approval; and;
4. Implement control alternatives determined to be cost effective.

## **X. OPERATIONAL PLAN REVISIONS**

As communities embark on coordinated efforts to address CSOs, serious consideration should be given to objective and measurable indicators that illustrate trends and results over time. Measures of success generally fall into four categories:

- Administrative measures that track programmatic activities;
- End-of-pipe measures that show trends in the discharge of Combined Sewer System flows to the receiving water body, such as reduction of pollutant loading, the frequency of CSOs, and the duration of CSOs;
- Receiving water body measures that show trends of the conditions in the water body to which the CSO occurs, such as trends in dissolved oxygen levels;
- Ecological, human health, and recreational use measures illustrate trends in conditions relating to the use of the water, its effect on the health of the population that uses the water and the health of the organisms that reside in the water, including beach closures, attainment of designated uses, habitat improvements, and fish consumption advisories. Such measures would be coordinated on a watershed basis as appropriate.

CSO Operational and Long Term Control Plans should be updated as part of the community's application for renewal of their NPDES permit. In fact, SEA 431 requires LTCPs to be updated at least every five years and requires implementation of any controls determined to be cost effective. Any revisions to these plans must be supported by documentation of the successes and impacts of the Plans to date and review of any new technology which may further the environmental health of their receiving stream. Changes of these plans must be submitted to IDEM for approval.

## **XI. MINIMIZATION OF INDUSTRIAL DISCHARGES DURING WET WEATHER**

Section 24 of SEA 431 requires that a process be described on how a community can coordinate with its industrial dischargers to the sewer collection system to minimize the potential impacts of these discharges to the water bodies. The federal and state Industrial Wastewater Pretreatment programs regulate the discharge of industrial wastewater to publicly owned treatment works (POTWs). This program differs somewhat from a direct discharge of industrial wastewater to waters of the state; by taking into account some level of dilution that occurs in the collection system and the additional treatment at the municipal wastewater treatment plant. What is not taken into account in this program is the possibility that these discharges may not make it to the wastewater treatment plant during a wet weather event.

One of the “Nine Minimum Controls” specified in the National and State CSO programs is the review and modification of the Industrial Wastewater Pretreatment Program. The general premise of this requirement is for municipalities to fully understand the nature and extent of all of their industrial discharges and to understand which CSO discharge points may be impacted by these discharges. In addition to this requirement, municipalities must establish an agreement with their industrial dischargers specifying, when and where possible, the industrial discharger should control its discharge to the greatest extent practicable during wet weather periods. This would be particularly beneficial where the industry discharges batches of wastewater at certain times or under certain conditions specified in its pretreatment permit. If the discharge could be controlled until after the wet weather event has ended, it would insure that the discharge could be fully transported and treated to the extent intended under the pretreatment program regulations.

## **XII. DEVELOPMENT OF A COST/PERFORMANCE CURVE**

SEA 431 requires CSO municipalities seeking a suspension to: capture the “first flush” for treatment, and implement cost effective controls that will attain water quality standards (or maximize the extent to which they are attained, if a UAA demonstrates the designated use is not otherwise attainable).

A municipality may use a knee of the curve analysis to determine cost effectiveness. SEA 431 and federal law also require a CSO community applying for a temporary suspension to implement CSO controls until they reach the point where implementation of further controls would result in substantial and widespread economic and social hardship. This may be the same point as the knee of the curve, or it may require a CSO community to incur more costs than it would under a simple cost-effectiveness analysis.

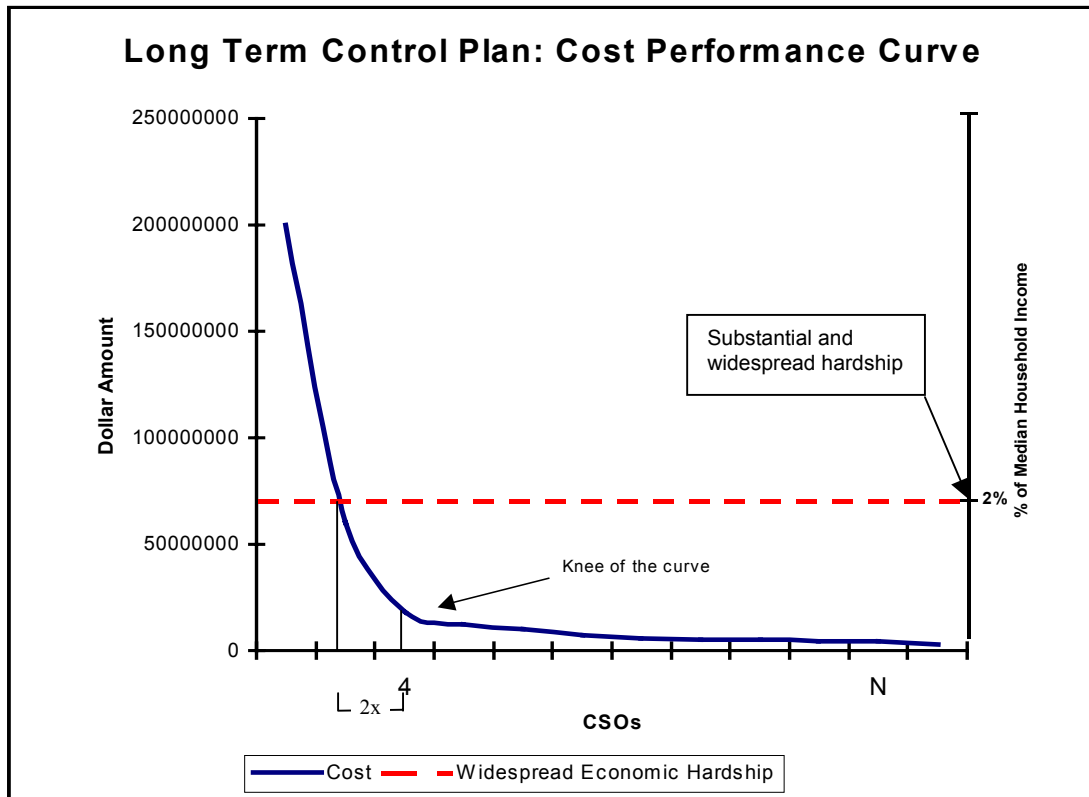
### **A. Establishing the “Knee of the Curve” Point on Cost/Performance Curve**

The knee of the curve analysis consists of estimating the CSO control costs for a range of control levels and rainfall events. CSO control performance is estimated for the control levels. A curve is developed comparing cost to performance and identifying the point (the knee) where the incremental change in the cost of a control alternative per change in performance of the control alternative where the slope of the cost/performance curve where the change is greatest.

Costs should include capital, operational, maintenance, and equipment replacement costs. Capital cost, the cost to build a particular project includes construction cost, engineering costs for design and services during construction, legal and administrative costs, and a contingency.

Performance measures, for communities with several CSOs, can include total time of exceedance of a water quality standard, on an annual average basis. This performance measure is estimated using a collection system and receiving stream model. An in-stream model is suggested because of the cumulative impact of the CSOs on the receiving stream. The performance measures are estimated using a collection system model or enough flow monitoring and rainfall data to develop a correlation between overflow duration or volume, and rainfall volume.

The chart below provides a theoretical graphic demonstration of a Cost Performance Curve.



The chart illustrates where beyond the knee-of-the -curve point CSO municipalities may use a watershed approach to achieve equal or greater water quality benefits. By using a watershed approach, Best Management Practice nonpoint source pollution reduction projects could be implemented to achieve twice the pollutant loading reduction at a much lower cost to the community.

## B. Reduction of CSOs Beyond the Knee-Of-The-Curve

SEA 431 allows CSO municipalities to request suspensions of the designated use and associated water quality criteria provided certain criteria are met. One criterion is that the municipality's long-term control plan provides for the implementation of cost effective controls, which can be determined by using a knee of the curve analysis. However, SEA 431 also requires that the provisions of 40 CFR 131.10 be met; it is our belief that many municipalities will rely on 131.10(g)(6) to meet this criterion.

Indiana recognizes that implementing controls to reduce or eliminate CSO impacts (particularly discharges of *E. coli*) beyond the knee-of-the-curve to the point where the municipality would incur



substantial and widespread economic and social impact could require a large expenditure of money by a municipality. Additionally, some municipalities may be incurring financial obligations as a result of their storm water (MS4) and/or Safe Drinking Water requirements or other water quality improvement projects. IDEM believes municipalities should be able to factor in these other project costs when determining whether the test set forth in 40 CFR 131.10(g)(6) has been met. However, a municipality may be able to take other steps to reduce discharges of the pollutant to the impacted receiving stream that would provide a more significant reduction in the pollutant for less cost. IDEM is proposing to allow municipalities to follow the approaches outlined below to demonstrate that they have met the requirement in 40 CFR 131.10(g)(6). Please see Use Attainability Analysis Section for a more detailed information on the widespread and substantial economic and social impact tests.

Municipalities will be afforded these choices beyond the "knee of the curve":

1. reduce CSO impacts by implementing CSO controls to the point where the municipality incurs substantial and widespread economic and social impact,
2. implement other controls within a 14-digit H.U.C. watershed of the impacted receiving stream designed to control the pollutant at issue (for example, eliminate leaking septic systems or implement best management practices) that would result in a reduction of loadings to a level equal to twice the amount of reduction that would otherwise be achieved through CSO controls alone<sup>1</sup>, or
3. use a combination of CSO reductions and other source controls to achieve equivalent or greater pollutant reductions than CSO reductions alone beyond the "knee of the curve."

Municipalities that decide to implement other source controls besides further CSO reductions must:

- **Identify Pollutant Loading Reductions.** Once a municipality reaches the knee-of-the-curve, the municipality must quantify the reduction in pollutant loading that would be achieved if the municipality implemented such further CSO controls to eliminate impacts as would be necessary before it incurred hardship. Pollutant loading must be quantified for each specific pollutant at issue.
- **Identify water quality problems.** Municipalities must identify and document causes of water quality impairments for specific pollutants to the affected receiving water on a 14-digit watershed and explain how the sources were determined.
- **Develop a Plan.** Municipalities must develop a watershed management plan (see <http://www.ai.org/idem/owm/planbr/wsm/watershed/319Grant/GrantApp/WMPChecklist.html> for the watershed action checklist) containing specific controls that would reduce the impacts by twice the loading levels from CSO outfalls that were not eliminated beyond the "knee of the

---

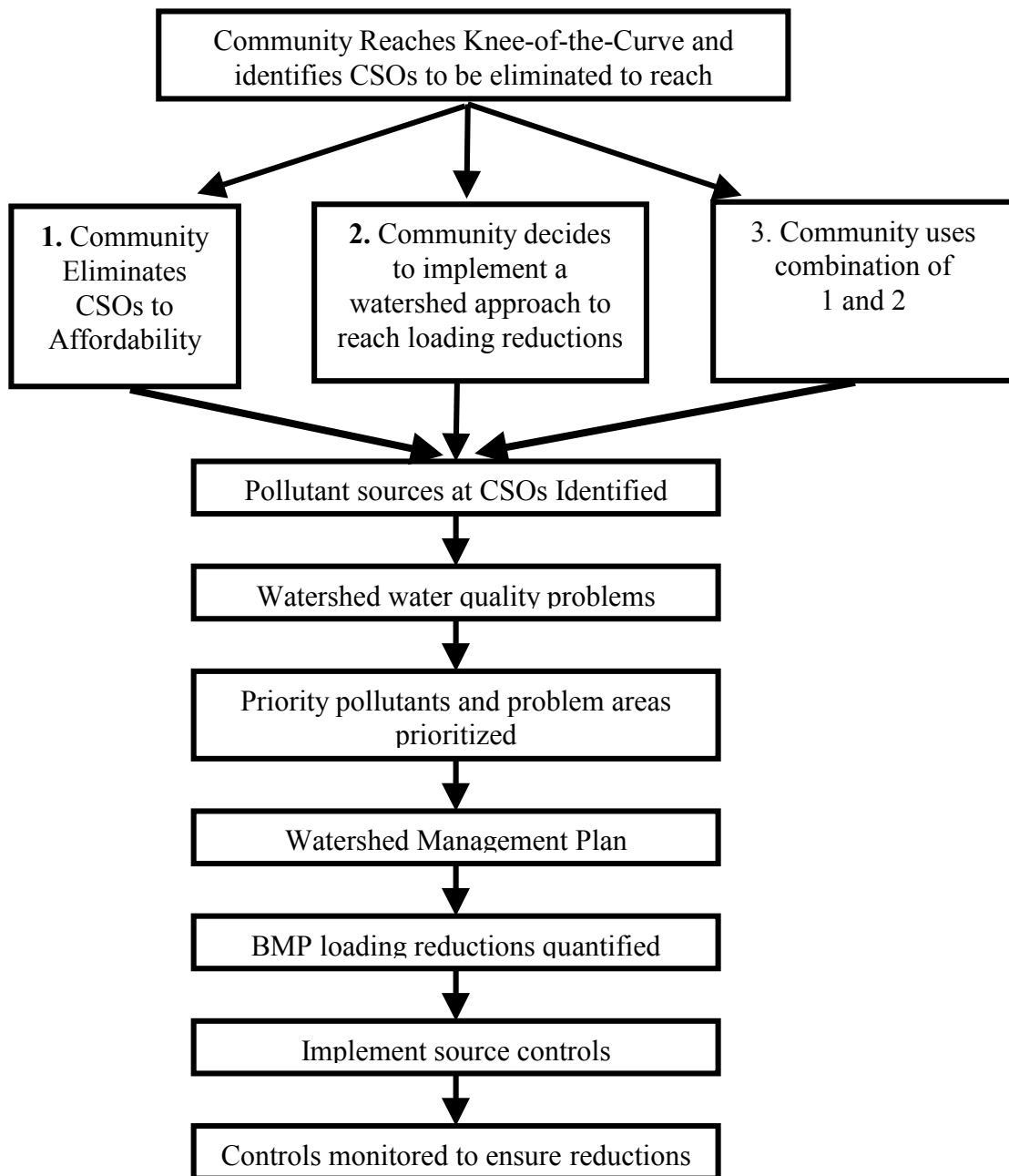
1. EPA has not approved this innovative approach. IDEM is still discussing this approach with EPA.

curve." The municipality must have the ability to enforce these controls by developing an ordinance, receiving permanent easements or some other enforceable mechanism.

- **Demonstrate how the plan would reduce loading.** The municipality must quantify the reductions in specific pollutant loading to the affected receiving stream that each project would provide and demonstrate that the pollutant reduced would equal twice the loading at the CSO outfalls that were not eliminated. Information to be used would include:
  - Total annual load of pollutant.
  - Total annual load reduction through elimination of CSO(s).
  - Total annual load reduction for each source control.
  - Total annual load reduction for all source controls employed.
  - Total annual source controls employed.
  - Comparison of water quality conditions made before and after source controls are implemented.
- **Implementation.** Municipalities must implement the projects within the same timeframe as CSO controls.
- **Measuring Success.** Upon project completion, source controls must be inspected to ensure that the control is properly sited, the materials and plans satisfy established specifications, and the installation job meets performance standards. Pollutant reductions must be verified and quantified by municipalities. IDEM will notify municipalities that they have met CSO reduction requirements once the reductions were verified using a source control model approved by IDEM. All source controls must undergo an annual on-site assessment by a qualified inspector. The state may require ambient monitoring and modeling to assess the effect of the controls in meeting pollutant load reductions.

This process is illustrated in the attached flowchart.

**Flow Chart: Options for Pollutant Loading Reductions Beyond Knee-of-the-Curve**



### **XIII. FINANCIAL CAPABILITY & IMPLEMENTATION SCHEDULE**

Similar to the EPA National CSO Guidance on establishing a CSO LTCP Implementation Schedule, this guidance recommends a two-phased approach along with the development of the implementation schedule as summarized above are clearly outlined in *Guidance for Financial Capability Assessment and Schedule Development* (EPA March 1997). The permit holder is strongly encouraged to follow the steps outlined in this referenced document in conducting the affordability analysis and for developing the implementation schedules. This is to insure that the key issues addressed and conclusions derived are based on rational, proven standardized methodologies.

The financial capability analysis begins with a simple computation to arrive at a general benchmark. The remaining exercises are much more subjective and require the user to have a reasonable background in the socio-economic conditions for their community. These less objective exercises rely on judgements on the implications of the compiled economic data. With each step, there is refinement of the originally computed benchmark to further assess whether the community's affordability margins are in jeopardy.

#### **A. Wastewater Cost Per Household Indicator**

The initial step in the analysis involves the calculation of a generalized benchmark that relates the LTCP costs and current wastewater costs to the CSO municipality's representative Median Household Income on an annualized basis. This benchmark is called the, Wastewater Cost Per Household Indicator or  $WW_{CPHI}$ . It is defined as follows:

$$WW_{CPHI} = \frac{\text{Annualized LTCP and Existing Wastewater Costs per Household}}{\text{Annualized Median Household Income}} \times 100\%$$

If the  $WW_{CPHI}$  percent is less than 1 percent, then the overall economic impact per household is labeled "LOW" impact. If the  $WW_{CPHI}$  percent falls between 1 and 2 percent, the impact is labeled "MEDIUM." If the  $WW_{CPHI}$  is greater than 2 percent, the impact would be labeled as "HIGH."

For the "medium" result, the implication is that more detail is necessary to complete the affordability assessment. This means that additional socio-economic factors need to be considered. For purposes of determining if the  $WW_{CPHI}$  is 2% or greater, then the socio-economic impact shall be considered widespread.

#### **B. Socio-Economic Indicators Matrix (SEIM)**

As with the UAA process, for a  $WW_{CPHI}$  result greater than 1%, a "scoring" matrix is set up to consider additional economic factors external to the actual project costs. This analysis has been labeled the Socio-Economic Indicator Matrix (SEIM) which demonstrates the widespread nature of

the economic and social impact. The Socio-Economic Indicator Matrix uses the following indicators represent a broad set of standardized municipal level indicators for each CSO municipality.

Calculate each of the following indicators:

- **Median Household Income (MHI)**

Median Household Income for the CSO municipality should represent all incomes within its service area. Compare the CSO municipality MHI to the National MHI from the 2000 Census.

Weak: More than 25% below National MHI

Mid-Range: + or – 25% of the National MHI

Strong: More than 25% above National MHI

- **Average Unemployment Rate for 2000**

This should be calculated over the 12 months of the calendar year 2000.

Weak: More than 1 percentage point Above the National Average for 2000

Mid-Range: + or – percentage point of National Average for 2000

Strong: More than 1 percentage point below the National Average for 2000

- **Overall Net Debt Per Capita**

This should include all local public debt from all sources such as school debt, library debt, bridge and road debt, and any other local public debt burden incurred by residents of the CSO municipality's sewer service area such as EDIT bond debt and TIF bond debt.

Weak: Greater than \$3,000

Mid-Range: \$1,000 - \$3,000

Strong: Less than \$1,000

- **Bond Rating**

This should be identified for the CSO municipality's utility, which may be based on ratepayers, property taxpayers or a combination of these bases. If this is not possible, then it is reasonable to use the CSO municipality's bond rating, only.

Weak: BB-D (S&P) or Ba-C (Moody's)

Mid-Range: BBB (S&P) or Baa (Moody's)

Strong: AAA-A (S&P) or Aaa-A (Moody's)

- **Property Tax Revenue Collection Rate**

This should be available from the Township Assessors' Offices or through the Indiana State Tax Commission's Office.

Weak: Below 94%

Mid-Range: 94% - 98%

Strong: Above 98%

Combined Sewer Overflow (CSO) Long-Term Control Plan  
Use Attainability Analysis Guidance

---

Next, score the Socio-Economic Indicators where: Weak = 3; Mid-Range = 2; Strong = 1.

Next, Sum the scores of the Socio-Economic Indicators.

Next, divide the sum of the Socio-Economic Indicators by 5 to calculate a SEIM Average. The SEIM average is represented by the Socio-Economic Indicator Matrix strength of the CSO municipality, where: WEAK = Above 2.5, MID-RANGE = Between 1.5 and 2.5, STRONG = Below 1.5.

A Socio-Economic Indicators Matrix worksheet is shown below.

**S-E INDICATORS MATRIX WORKSHEET**

<b>S-E Indicator Matrix</b>	<b>Municipality Value</b>	<b>Weak, Mid-Range, or Strong</b>	<b>Municipality Score</b>
<b>Median Household Income</b>			
<b>Tax Collection Rate (%)</b>			
<b>Bond Rating</b>			
<b>Overall Net Debt Per Capita</b>			
<b>Average Unemployment Rate, Year 2000</b>			
<b>S-E Indicator Matrix Total</b>			

### Socio-Economic Indicators Matrix

The purpose of this matrix is to provide a rational means by which to judge several key economic factors that strongly influence a community's ability to afford major capital projects. This matrix uses six standardized factors, if a CSO municipality desires to use other socio-economic indicators as a substitute, then it must receive written approval from IDEM.

The WW<sub>CPHI</sub> and the SEIM analysis demonstrates the substantial and widespread economic and social impact that a community will experience with the implementation of its CSO LTCP and other water related controls such as storm water and drinking water capital improvements and long term operation and maintenance costs.

### C. Overall Financial Capability Matrix and Implementation Schedule

The below Overall Financial Capability Matrix and Implementation Timeline Table represents the substantial economic burden realized by the CSO municipality to fully implement the Long Term Control Plan. By finding the level of financial capability burden of the CSO Municipality, it is also possible to set the length of time for the LTCP Implementation Schedule. The Overall Financial Capability Matrix and Implementation Timeline should be used as a beginning point to negotiate the actual LTCP Implementation Schedule, which must be approved by IDEM. For LTCP Implementation Schedules that exceed 10 years, it may be necessary to use an enforceable document with a longer term than the 5 year NPDES Permit to legally establish such a lengthy LTCP Implementation Schedule. It may be recommended for these longer term LTCP Implementation Schedules that an Agreed Order between the CSO Municipality and IDEM be used to provide a long-term legal agreement between the two parties.

**Overall Financial Capability Matrix and Implementation Schedule Table**

<b>S-E Indicator Score</b>	<b>WW<sub>CPHI</sub> Below 1%</b>	<b>WW<sub>CPHI</sub> 1% to 2%</b>	<b>WW<sub>CPHI</sub> Above 2%</b>	<b>Length of Time for LTCP Implementation Schedule</b>
<b>Above 2.5</b>	<b>Medium</b>	<b>High</b>	<b>High</b>	<b>High = 10-20 years</b>
<b>1.5 to 2.5</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>	<b>Medium = 5-10 years</b>
<b>Below 1.5</b>	<b>Low</b>	<b>Low</b>	<b>Medium</b>	<b>Low = 5 years</b>



#### **XIV. USE ATTAINABILITY ANALYSIS (UAA) 40 CFR 131.10**

Federal law requires states to designate all waters for recreational use, unless the state can show that the use is not attainable pursuant to a UAA. The Water Pollution Control Board has designated all waters in Indiana for full body contact recreational use. Once a use is designated, it can only be changed to provide less protection through the use attainability process set forth below.

Senate Enrolled Act 431 defines a Use Attainability Analysis as a structured scientific assessment of the physical, chemical, biological, and economic factors affecting the attainment of a designated use as provided in 40 CFR 131.3(g). The UAA provides the scientific, technical and economic support for a state's determination that a designated use is not attainable based on one or more of the factors listed in 40 CFR 131.10(g). These federal regulations provide the legal basis for removing a designated use. Although the regulations do not refer to a "temporary suspension" of a designated use, EPA has indicated that it will apply the same criteria that apply to removal of a designated use to a temporary suspension of a designated use.

A designated use may be temporarily suspended only if the requirements of 40 CFR 131.10<sup>2</sup>, 131.20, 131.21 and SEA 431 are met. The applicable requirements of 40 CFR 131.10 will require IDEM to:

- (1) demonstrate that the use is not an existing use,
- (2) demonstrate that attaining the designated use is not feasible because at least one of the factors in 40 CFR 131.10(g) is met,
- (3) demonstrate that the use cannot be attained by implementing effluent limits required under sections 301(b) and 306 of the CWA and cost-effective and reasonable best management practices for nonpoint source control, and
- (4) demonstrate that the suspension will not affect the attainment and maintenance of the water quality standards of downstream waters.

The CSO municipality will also have to meet certain requirements in order to receive a temporary suspension. These are discussed in the next section.

Although IDEM and EPA will ultimately be making the determination of whether a designated use may be temporarily suspended, municipalities interested in obtaining a temporary suspension will need to supply the information necessary to enable IDEM to make the determination. IDEM will also be reviewing other sources of relevant information, but the CSO municipality is best suited to provide much of the necessary information.

---

<sup>2</sup> These factors also apply to the removal of a use, designation of seasonal uses, adoption of subcategories or variances. While this document focuses on the temporary suspension relief provided pursuant to SEA 431, municipalities may want to keep in mind that these may be other avenues they wish to pursue.

The six factors listed in 40 CFR 131.10(g) that provide the basis for suspending a designated use are:

**1. Naturally occurring pollutant concentrations prevent the attainment of the use;**

This provision of a use attainability analysis is most applicable to aquatic life uses and has virtually no applicability to a suspension of a recreational use. Naturally occurring pollutants would be those pollutants associated with geologic conditions which will cause background concentrations of some pollutants to be elevated above what would normally be found in the water. Examples of naturally occurring pollutants would be: arsenic associated with shale deposits, iron associated with iron ore deposits, etc. While *E. coli* is found throughout the environment and is associated with fecal matter of all warm-blooded animals, the concentrations found in the urban environments far exceed what would be found at normal background levels.

**2. Natural, ephemeral, intermittent, or low-flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met;**

It is the policy of the U.S. EPA that physical factors, which are important in determining attainability of aquatic life uses, may not be used as the sole basis for not designating a recreational use consistent with the CWA Section 101(a)(2) goal. The basis for this policy is that the States and EPA have an obligation to do as much as possible to protect the health of the public. In certain instances, people will use whatever water bodies are available for recreation, regardless of these physical conditions.

**3. Human-caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place;**

Generally, human-caused sources of pollution that may prevent the attainment of a recreational use designation, can be controlled by the use of best management practices (BMPs) or the installation of any number of control technologies.

**4. Dams, diversions, or other types of hydrological modifications preclude the attainment of the use, and whether it is feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use;**

Dams, diversions, or other types of hydrological features may create conditions that are unsafe for the conduct of recreation in or on the water. Dams, rapids, sluices and low-head dams are well known to be physical hazards to recreation in or on the water. Conversely, some structures have been built to modify the hydrology at a site for the purpose of attracting people to the water. Although all waters in Indiana have already been designated for full-body contact recreation, this information may be useful to create sub-categories of the recreational use around these hazards.

**5. Physical conditions related to the natural features of the water body, such as lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to [chemical] water quality, preclude attainment of aquatic life protection uses; or**

This factor only applies to the aquatic designated use and would be applicable in determining whether proper conditions exist to support specific aquatic creatures. An example would be: trout or salmon species of fish require certain physical features to thrive, such as a proper substrate of rocks, sand and gravel, stream velocity, riffles, colder water temperatures, and stream bank cover

**6. Controls more stringent than those required by sections 301(b) and 306 of the Clean Water Act would result in substantial and widespread economic and social impact.**

This factor will be the primary mechanism for suspending a recreational designated use. A key issue in the determination of this test will be the cost for ratepayers of additional controls. There will be a cost per ratepayer that will place an undue economic burden upon that ratepayer and ultimately upon the community in general. This burden to the ratepayer is generally determined by a percentage of the median household income (MHI). Below 1.0% of the MHI would be considered a low burden, 1.0% to 2.0% of the MHI would be considered a mid-range burden, and above 2.0% of the MHI a high burden. EPA has not defined “substantial and widespread economic and social impact.”

Indiana will allow CSO municipalities to use one of three different tests to demonstrate that substantial and widespread economic and social impact should be presumed.

**TEST 1: Wastewater Cost Per Household Indicator (WW<sub>CPI</sub>)**

The first test of whether substantial and widespread economic and social impact can be presumed is the wastewater cost test. This test calculates the annual wastewater costs per household indicator (WW<sub>CPI</sub>) by adding the existing wastewater costs (WW<sub>Ex</sub>) and the expected Long Term Control Plan costs (WW<sub>LTCP</sub>). These costs are then compared to the MHI. During the calculation of the Implementation Schedule (above), the SEIM score was determined for the NPDES permit holder. Find the Use Attainability Analysis Test chart below, and find the point where the WW<sub>CPI</sub> and the SEIM score meet. If this point is on or above the WW<sub>CPI</sub> line, then the NPDES permit holder has demonstrated that a substantial and widespread economic and social impact will occur. Therefore, a temporary suspension of use is approved.

**TEST 1: Wastewater Cost Per Household Indicator Calculations**

$$\text{Annual WW}_{\text{CPI}} = \text{WW}_{\text{Ex}} + \text{WW}_{\text{LTCP}}$$

$$\frac{\text{Annual WW}_{\text{CPI}}}{\text{Households}} = \text{Annual WW}_{\text{CPI}}$$

$$\frac{\text{Annual WW}_{\text{CPI}}}{\text{MHI}} \times 100 = \text{Annual WW}_{\text{CPI}} \text{ as percentage of MHI}$$

In cases where the annual wastewater control costs have not demonstrated a substantial and widespread economic and social impact, the NPDES permit holder may use Test 2.

## TEST 2: Total Water Quality (TWQ) Cost Test

The Total Water Quality (TWQ) Cost Test could be used by those communities which cannot demonstrate substantial and widespread economic and social impact through the Wastewater Cost Test. The TWQ Cost Test calculates the annual existing and anticipated water quality costs and compares them to the MHI. During the calculation of the Implementation Schedule (above), the SEIM score was determined for the NPDES permit holder. Find the Use Attainability Analysis Test chart below, and find the point where the  $TWQ_{CPHI}$  and the SEIM score meet. If this point is on or above the  $TWQ_{CPHI}$  line, then the NPDES permit holder demonstrated that a substantial and widespread economic and social impact will occur. Therefore, temporary suspension of use is approved.

Total water quality control costs consist of:

- Existing and anticipated wastewater costs ( $WW_{Ex}$ ,  $WW_{LTCP}$ )
- Wastewater Long Term Control Plan implementation costs ( $WW_{LTCP}$ ),
- Existing and anticipated storm water control costs ( $SW_{Ex}$ ,  $SW_{Proj.}$ ),
- Existing and anticipated nonpoint source control costs ( $NPS_{Ex}$ ,  $NPS_{Proj.}$ ),
- Existing and anticipated drinking water costs associated with implementing the Safe Drinking Water Act or other capacity development enhancements to a public water supply ( $DW_{Ex}$ ,  $DW_{Proj.}$ ).
- 

## TEST 2: Total Water Quality Cost Per Household Calculations

$$\text{Existing Annual TWQ Costs} = WW_{Ex} + DW_{Ex} + SW_{Ex} + NPS_{Ex}$$

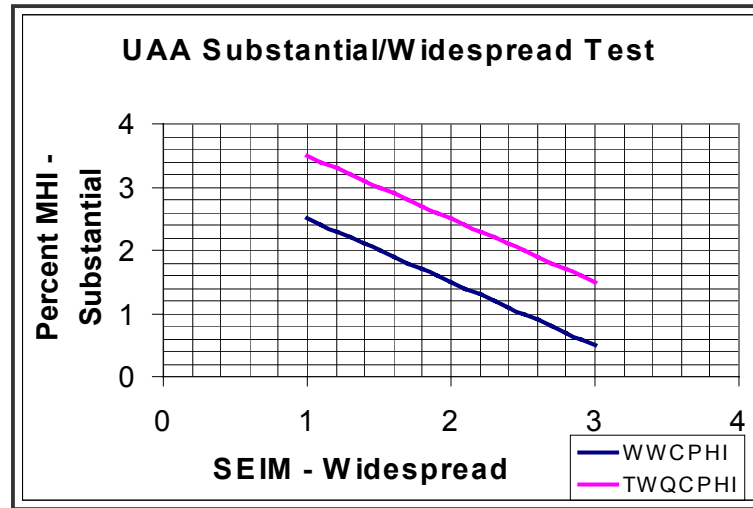
$$\text{Projected Annual TWQ Costs} = WW_{LTCP} + DW_{Proj.} + SW_{Proj.} + NPS_{Proj.}$$

$$\text{Existing} + \text{Projected TWQ} = \text{Annual Total TWQ Costs}$$

$$\frac{\text{Annual Total TWQ}}{\text{Households}} = TWQ_{CPHI}$$

$$\frac{TWQ_{CPHI}}{MHI} \times 100 = \text{TWQ Percentage}$$

In cases where the annual Total Water Quality costs have not demonstrated a substantial and widespread economic and social impact, the NPDES permit holder may use Test 3.



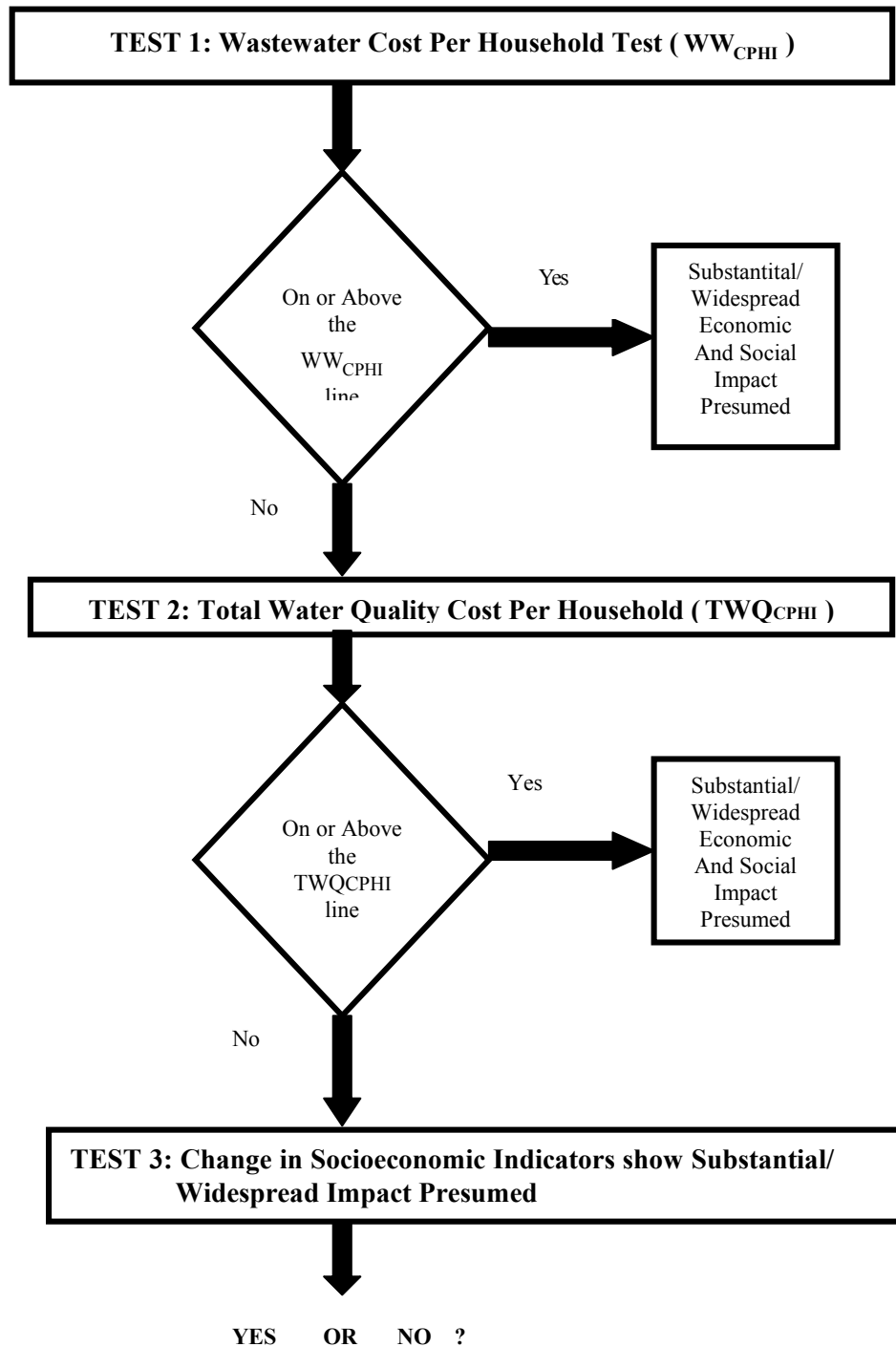
### TEST 3: Change in Socio-Economic Indicators Test

In communities throughout the state, the financial impacts of undertaking pollution controls could potentially cause far reaching and serious socioeconomic impacts. If the tests outlined above do not demonstrate substantial and widespread economic and social impact, then IDEM would be willing to consider additional factors which would demonstrate widespread adverse impacts on the community or surrounding area. IDEM would consider the relative magnitudes of socioeconomic indicators such as:

- Reduction in median household income for service area,
- Reduction in employment levels,
- Increase in overall net debt per capita,
- Decreased bond rating,
- Reduction in property tax revenue as a percent of full market property value,
- Reduction in property tax revenue collection rate.

Socioeconomic indicators need not be limited to the ones listed above. For additional suggestions that would help municipalities determine what information to provide (keep in mind that EPA also has to approve any suspension or removal of a designated use), please review the following documents: Combined Sewer Overflows, Guidance for Financial Capability Assessment and Schedule Development, document number EPA832-B-97-004, March 1997 and the Economic Guidance for Water Quality Standards, February 8, 2000 ([www.epa.gov/OST/econ](http://www.epa.gov/OST/econ)). A copy of these documents can be obtained from the Indiana Department of Environmental Management, Office of Water Quality, or from the U.S. Environmental Protection Agency.

**Figure 3: Flow Chart For U.A.A. & Substantial/Widespread Presumption Tests**



**XV. RELIEF PROVIDED BY SEA 431**

SEA 431 provides CSO communities a process for obtaining targeted relief. More specifically, SEA 431 provides for the temporary suspension of designated uses and their associated water quality criteria if all the requirements are met. The suspension only applies:

1. to the NPDES permit holder for discharges from the CSO points listed in the permit holder's permit; and
2. during the time and to the physical extent that the designated uses and water quality standards are not attained due to discharges from the listed CSO points. The Act allows a suspension to occur for a maximum of four days after the end of a CSO discharge.



## **XVI. OBTAINING AND MAINTAINING A TEMPORARY SUSPENSION**

### **A. Obtaining a Temporary Suspension**

In order to obtain a temporary suspension, the permit holder must:

1. have a LTCP approved by IDEM that captures first flush and provides for the implementation of cost effective control alternatives,
2. have a UAA approved by IDEM and EPA,
3. have an NPDES permit that incorporates the LTCP and the terms of the temporary suspension;
4. have implemented or be implementing the approved LTCP in accordance with the schedule approved in the LTCP, and
5. be in compliance with its Combined Sewer Operational Plan and all other operation and maintenance requirements for its treatment plant and combined sewer system.

In order to apply for and obtain a temporary suspension of a designated use, the following steps must be followed.

#### **STEP #1 - Determine whether the designated use for which the CSO permit holder seeks a temporary suspension is an existing use.**

EPA regulations allow states to change the use designated for a water body under certain circumstances, provided the state does not remove an existing use (40 CFR 131.10(g)). An existing use is a use actually attained in the water body on or after November 28, 1975 (40 CFR 131.3(e)). A temporary suspension of the designated use is a removal of a use, so existing uses cannot be suspended.

An existing recreational use can be established by demonstrating that:

- fishing, swimming, or other recreational uses have actually occurred on or after November 28, 1975; or
- the water quality is suitable to allow the recreational use to be attained - unless there are physical problems, such as substrate or flow that prevent the use from being attained.

#### **Principles for Determination of a Recreational Existing Use:**

IDEM recognizes that a recreational use that has occurred on or after November 29, 1975, may not have occurred 365 days each year. For example, people are unlikely to be engaging in recreational activity in the water during the winter or during severe storm events. Therefore, there may be

specific time periods when IDEM will not consider a water body to have an existing recreational use.

IDEM will apply the following principles when making an existing use determination.

1. Indiana is determined to take all reasonable steps to protect all people who recreate in its waters, especially children. Therefore, there is a presumption in favor of finding an existing use for full-body contact recreation if the water is free of physical hazards and accessible when flowing near residential neighborhoods, parks, or schools. Indiana recognizes that some of these waters may be too shallow during dry periods of the year to allow for adult swimming activities. However, Indiana also recognizes that: (a) children will still splash in these streams and may ingest the water, and (b) wet weather events that trigger CSO discharges often provide additional flow that attracts people, especially children, to the water during such times.
2. Indiana does not want to promote recreational usage in waters that are dangerous due to physical hazards in the water, such as swift currents, rapids, dams or shipping traffic. Therefore, Indiana will not presume a recreational use exists for these waters unless during these high flow conditions there are actual recreational uses.
3. The occasional or incidental use by individual adults does not automatically establish an existing use for recreation.
4. If there is an actual recreational use of the water during or immediately after a significant wet weather event (except as described in #3), then an existing use has been established. Conversely, if there is no recreational use during or immediately after a significant wet weather event, there will be no recreational existing use for that period unless water quality is otherwise suitable.
5. If the water quality is unsafe and access to the water is precluded by (a) existing impediments to physical access such as steep banks, fencing or high retaining walls, then IDEM will not presume an existing recreational use. In order for IDEM to determine that access is precluded by the municipality, the municipality must take steps to actively prevent adults and children from actually using the water. This requires the municipality to prevent and control access to the water and to conduct a reasonable proactive outreach media and educational program to prevent actual use during and immediately following a significant wet weather event. This presumption will not apply to recreational beaches open to the public and other swimming areas designated for public recreation.

IDEM encourages municipalities to consult with the agency prior to completion of a long-term control plan to discuss whether a specific water body has an existing recreational use.

If there are times when the designated use is not an existing use, the municipality should proceed with the following steps.

**STEP #2 - Determine whether any of the factors listed in 40 CFR 131.10(g) can be met.**

IDEM will make this determination subject to EPA approval, but the municipality will need to provide information to enable IDEM to make this determination through the development of a UAA.

**STEP #3 - Submit the UAA (and LTCP) to IDEM.**

The UAA must discuss the factors identified in STEP #1 above and clearly indicate what factor it is relying on under 40 CFR 131.10(g) to request a temporary suspension. The municipality must submit all data and information relevant to this request when it submits the UAA. Additionally, if it has not already done so, the municipality must submit a LTCP to IDEM, which is subject to IDEM approval.

**STEP #4 - IDEM must determine whether the UAA (and LTCP) is sufficient to justify a determination that the designated use is not attainable.**

IDEM must determine whether all of the relevant requirements of SEA 431 have been met, including whether the CSO community has or is implementing its approved LTCP in a timely manner and whether the community is in compliance with its operation and maintenance requirements. The requirements of 40 CFR 131.10 that must be met are discussed in the prior section. IDEM may also determine it needs more information from the municipality.

**STEP #5 - IDEM must conduct a public hearing.**

Assuming IDEM makes an affirmative determination in the prior step, IDEM must provide notice and an opportunity for a public hearing. Assuming information is not provided that would contradict the determination, IDEM will proceed to Step #6.

**STEP #6 - IDEM must submit the proposed suspension to EPA for approval.**

IDEM is required by SEA 431 and federal law to submit the proposed suspension and any supporting analyses, including the UAA, to EPA for approval.

**STEP #7 – IDEM must modify the CSO municipality’s NPDES permit and its water quality standards.**

IDEM will either modify or reissue the CSO municipality’s to incorporate the terms of the temporary

suspension and the approved long term control plan into the CSO municipality's NPDES permit. IDEM will also modify its water quality standards via a rulemaking.

**STEP #8 - EPA must approve the proposed suspension and changes in water quality standards.**

Due to a recent change in EPA's water quality standards regulations, state revisions to water quality standards do not become effective for purposes of the Clean Water Act until EPA has approved them. This rule is referred to informally as the "Alaska rule" and is found at 40 CFR 131.21. Because a suspension is a change in water quality standards, a CSO community's suspension will not take effect until EPA has approved the suspension.

**B. Maintaining a Temporary Suspension**

In order to maintain a temporary suspension, the permit holder must:

1. remain in compliance with its Combined Sewer Operational Plan and all other operation and maintenance requirements for its treatment plant and combined sewer system.
2. monitor its discharges and the water quality in the receiving water periodically, but at least every three years, and provide this information to IDEM,
3. periodically review and update its LTCP, but not less than every five years after approval by IDEM of the LTCP,
4. submit any changes to the LTCP to IDEM for approval and implement those control alternatives that are cost effective, in conjunction with its review of the LTCP, review information generated after the UAA was approved by IDEM to determine whether the conclusion of the UAA is still correct and provide the information to IDEM